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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,851	11/18/2003	Satoshi Arakawa	Q78507	3709

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EXAMINER

LEE, SHUN K

ART UNIT	PAPER NUMBER
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2884

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,851

Applicant(s)

ARAKAWA, SATOSHI

Examiner

Shun Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 and 24 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings were received on 24 January 2006. These drawings are acceptable.

Claim Objections

2. Claims 6 and 10 are objected to because of the following informalities:
 - (a) in claim 6, "the change of wavelength" on lines 1-2 should probably be --said stimulating light includes fluctuations in wavelength which-- (since "a given change of the wavelength of the stimulating light" as recited in claim 1 is a unit of measure in nanometers);
 - (b) in claim 10, "one or more stimulating light sources" on line 2 should probably be --one or more first stimulating light sources--; and
 - (c) in claim 10, "one or more stimulating light sources" on lines 3-4 should probably be --one or more second stimulating light sources--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 8 and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

New claim 8 recites the limitation “wherein the rate of change of intensity of the stimuable emission is suppressed to not larger than 1.0%/nm and not smaller than -1.0%/nm as an increase in the intensity of the stimulated emission due to a fluctuation in wavelength of one stimulating light source is cancelled by a reduction in the intensity of the stimuable emission due to a fluctuation in wavelength of a second stimulating light source” and new claim 9 recites the limitation “wherein the synthesized stimulating light projected by the plurality of stimulating light projection means suppresses the rate of change of intensity of the stimuable emission to not larger than 1.0%/nm and not smaller than -1.0%/nm by cancellation when the plurality of stimulating light projection means fluctuate in wavelength”.

Applicant has not pointed out where the new claims are supported, nor does there appear to be a written description of the claim limitations in the application as filed (MPEP § 2163.04).

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Amended claim 3 recites the limitation “wherein the stimulating light projecting means comprises a plurality of stimulating light sources which emit stimulating light of

different wavelengths". Thus the rate of change in units of %/nm in new claims 8 and 9 is undefined since there exists a plurality of different wavelengths. Therefore, claims 8 and 9 are indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Neyens *et al.* (US 5,517,034).

It should be noted that the specification discloses (pg. 5, lines 8-17) that "Said rate of change δ_o of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is a value obtained by dividing the inclination α_o of a tangent at a particular wavelength λ_o of a curve F representing the relation between the wavelength λ of the stimulating light and the intensity G of the stimulated emission emitted from the radiation image convertor panel exposed to a certain amount of stimulating light by the intensity G_o of the stimulated emission at the particular wavelength λ_o as shown in FIG. 3. That is, $\delta_o = \alpha_o/G_o$ ".

In regard to claims 1 and 2, Neyens *et al.* disclose (column 1, lines 46-60; column 2, lines 51-57) a radiation image read-out apparatus which comprises a radiation image converter panel, a stimulating light projecting means which projects stimulating light onto the radiation image converter panel, and a detecting means which

detects stimulated emission emitted from the radiation image converter panel upon exposure to the stimulating light beam and reads out a radiation image recorded on the radiation image converter panel, wherein the stimulating light projecting means projects, onto the radiation image converter panel, stimulating light at an optimal wavelength for photostimulation (*i.e.*, the optimal wavelength for photostimulation of the radiation image converter panel is the wavelength of the peak or maximum of the stimulation spectrum). It should be noted that the inclination α_0 of a tangent at the maximum of the stimulation spectrum is zero and thus the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is $\delta_0 = \alpha_0/G_0 = 0$. Therefore, stimulating light having a wavelength at the peak or maximum of the stimulation spectrum inherently have a $\delta_0 = 0$ which is not larger than 1.0%/nm and is not smaller than -1.0%/nm (or is from -0.5%/nm to 0.5%/nm).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US 4,780,376) in view of Neyens *et al.* (US 5,517,034).

In regard to claims 1 and 2, Nakamura discloses (column 8, lines 1-66) a radiation image read-out apparatus which comprises a radiation image converter panel, a stimulating light projecting means which projects stimulating light onto the radiation

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image converter panel, and a detecting means which detects stimulated emission emitted from the radiation image converter panel upon exposure to the stimulating light beam and reads out a radiation image recorded on the radiation image converter panel. While Nakamura also discloses (column 6, lines 37-55) that a source of stimulating rays having a wavelength is suitably selected according to the purpose, the apparatus of Nakamura lacks an explicit description that the stimulating light projecting means projects, onto the radiation image converter panel, stimulating light in a wavelength range where the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is not larger than 1.0%/nm and is not smaller than -1.0%/nm (or is from -0.5%/nm to 0.5%/nm). However, Neyens *et al.* teach (column 1, lines 46-60; column 2, lines 51-57) a stimulating light projecting means for projecting onto the radiation image converter panel, a stimulating light at an optimal wavelength for photostimulation (*i.e.*, the optimal wavelength for photostimulation of the radiation image converter panel is the wavelength of the peak or maximum of the stimulation spectrum). It should be noted that the inclination α_0 of a tangent at the maximum of the stimulation spectrum is zero and thus the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is $\delta_0 = \alpha_0/G_0 = 0$. Thus, stimulating light having a wavelength at the peak or maximum of the stimulation spectrum inherently have a $\delta_0 = 0$ which is not larger than 1.0%/nm and is not smaller than -1.0%/nm (or is from -0.5%/nm to 0.5%/nm). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a stimulating light having the wavelength of the maximum of the stimulation spectrum in

the apparatus of Nakamura, in order to obtain the optimal wavelength for photostimulation of the radiation image converter panel.

In regard to claims **4** and **5** which are dependent on claim 1, Nakamura also discloses (column 3, line 59 to column 4, line 2) that the radiation image converter panel has a stimuable phosphor layer formed of alkali halide stimuable phosphors represented by formula $MX:A$, wherein M represents at least one of K, Rb and Cs, X represents at least one of Cl, Br and I, and A represents Eu^{2+} or Tl^{+} .

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US 4,780,376) in view of Neyens *et al.* (US 5,517,034) as applied to claim 1 above, and further in view of Research Disclosure 308117 (Read-out of photostimulable latent fluorescent images, December 1989, 3 pages).

In regard to claim **3** which is dependent on claim 1, the modified apparatus of Nakamura lacks that the stimulating light projecting means comprises a plurality of stimulating light sources which emit stimulating light of different wavelengths and projects synthesized stimulating light including the stimulating light of different wavelengths onto the radiation image converter panel so that the stimulating light of different wavelengths are simultaneously projected on the same position on the radiation image converter panel. Research Disclosure 308117 teaches (pg. 3) to provide a stimulating light projecting means comprising a plurality of stimulating light sources which emit light of different wavelengths and projects synthesized light including the light of different wavelengths onto the radiation image converter panel so that the light of different wavelengths are simultaneously projected on the same position

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on the radiation image converter panel and wherein the synthesized light includes light of a difference-frequency, in order to photostimulate at the stimulation maximum of the radiation image converter panel. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a plurality of stimulating light sources in the modified apparatus of Nakamura, in order to obtain the optimal wavelength for photostimulation of the radiation image converter panel.

12. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US 4,780,376) in view of Neyens *et al.* (US 5,517,034) as applied to claim 1 above, and further in view of Bradley (US 5,043,991).

In regard to claims 6 and 7 which are dependent on claim 1, the modified apparatus of Nakamura lacks that the stimulating light projecting means includes wavelength fluctuations due to internal heating. Bradley teaches (column 1, line 64 to column 2, line 2) that even the best stabilized lasers have a drift of about 50 Å over the normal range of operating temperatures. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that the semiconductor laser in the modified apparatus of Nakamura is a typical semiconductor laser having a wavelength which drifts with temperature.

Allowable Subject Matter

13. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to a nonobvious improvement over the invention patented in US Patent 5,517,034. The improvement comprises in combination with other recited elements, in which the stimulating light projecting means comprises one or more stimulating light sources which emit stimulating light in a wavelength range where the rate of change is larger than 0, and one or more stimulating light sources which emit stimulating light in a wavelength range where the rate of change is smaller than 0.

Response to Arguments

15. Applicant's arguments filed 24 January 2006 have been fully considered but they are not persuasive.

Applicant argues (last paragraph on pg. 8 of remarks filed 24 January 2006) that Neyens *et al.* fail to teach the limitation of projecting stimulating light in a wavelength range where the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is not larger than 1.0%/nm and is not smaller than -1.0%/nm since Neyens *et al.* teach how to change the optimal wavelength for photostimulation by adjusting the composition of a stimutable phosphor member. Examiner respectfully disagrees. Neyens *et al.* state (column 2, lines 20-30) that "... the ultimately obtained phosphor composition determines the optimum wavelength for its photostimulation and, therefore, the sensitivity of the phosphor in a specific scanning system containing a scanning light source emitting light in a narrow wavelength region". It should be noted that a reference may be relied upon for all that it

would have reasonably suggested to one having ordinary skill the art (MPEP § 2123).

Thus Neyens *et al.* expressly teach that there is an optimal wavelength for photostimulation. Therefore, Neyens *et al.* disclose all of the elements of claim 1, and thus anticipate claim 1.

Applicant also argues (first paragraph on pg. 9 of remarks filed 24 January 2006) that a maximum emission is not isolated at a sole wavelength value citing column 4, lines 20-30 of Neyens *et al.* Examiner respectfully disagrees. Neyens *et al.* state (column 4, lines 20-30) that "In practice a maximum in the stimulation spectrum for the lithium fluxed stimuable europium activated barium fluorohalide phosphor can be found between 520 and 550 nm, whereas for the cesium fluxed phosphor it is situated between 570 and 630 nm. Maxima for the stimulation spectra of said phosphors after making a mixture thereof can be found at intermediate wavelengths. The stimulation spectrum of said mixture is further characterized in that the emission intensity at 500 nm stimulation is always lower than the emission intensity at 600 nm". Thus Neyens *et al.* expressly teach a maximum can be found between 520 and 550 nm. The cited passage does not indicate that that all the wavelengths between 520 and 550 nm form a maximum in the stimulation spectrum.

Applicant then argues (last paragraph on pg. 9 to fourth paragraph on pg. 10 of remarks filed 24 January 2006) that Neyens *et al.* fail to teach the aspects of claim 1 as argued above. Examiner respectfully disagrees for the reasons discussed above.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL



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